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ABSTRACT

A team of teacher educators, preservice teachers, and host teachers collaborated to develop and pilot a performance-based assessment model in the form of multimedia portfolios as a means of providing tangible, authentic, qualitative data to document preservice teacher learning objectives and P-12 student outcomes and, at the same time, promote reflective and collaborative practice. In this study, two teacher educators collaborated with four pairs of preservice teachers (two in early childhood education and two in secondary education) and host teachers in a Georgia school system. Preservice teachers' emerging competencies in impacting student learning were assessed using Interstate New Teacher Assessment and Support Consortium (INTASC) performance standards and represented through selected data recorded onto compact discs. The use of technology with this process approach afforded an easily accessible and transferable product for the documentation of teacher education program effectiveness to local, state, and national agencies. An appendix contains the INTASC principles. (Contains 13 references.) (Author/SLD)

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Using Multimedia Portfolios to Assess
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Abstract

A team of teacher educators, preservice teachers, and host teachers collaborated to develop and pilot a performance-based assessment model in the form of multimedia portfolios as a means of providing tangible, authentic, qualitative data to document preservice teacher learning objectives and P-12 student outcomes and, at the same time, promote reflective and collaborative practice. Preservice teachers' emerging competencies to impact student learning were assessed using INTASC performance standards and represented through selected data recorded onto compact discs. The utilization of technology with this process approach afforded an easily accessible and transferable product for the documentation of teacher education program effectiveness to local, state, and national agencies.

Using Multimedia Portfolios to Assess Preservice Teacher and P-12 Student Learning

During the last decade, legislators and educational leaders have sought to assess the effectiveness of teacher preparation programs and their impact on P-12 student learning. Reports such as the National Assessment of Educational Progress and more recently the Third International Mathematics and Science Study document for most policymakers that educational institutions are simply not making the grade. As a result, state legislators are requiring documentation that teacher education programs promote gains in P-12 student achievement. The Georgia Board of Regents has contributed to this national movement by requiring universities to develop relationships with partner schools and to document P-12 student learning as a result of that collaboration (BOR Principles, 1998). It is in response to the Georgia Board of Regents principles and implementation plan that teacher educators at an institution in the University System of Georgia designed a formative assessment model in the form of multimedia portfolios to document preservice teacher learning objectives and P-12 student outcomes and, at the same time, promote reflective practice for emerging practitioners, experienced practitioners, and teacher educators.

How does an educator know that a student has indeed learned a skill or attained a certain level? In the nebulous and dynamic arena of educational assessment, this question is difficult to answer. There is little agreement in what

students should know, how one documents that knowledge, or the vocabulary used to describe that attainment of knowledge. Pearlman and Jaeger (1998) state that unless an assessment program can clearly articulate goals and domains of attainment, teaching and learning in the United States will not be reformed. In a world seemingly dictated by standardized testing, it is essential that schools, colleges, and departments of education (SCDEs) continue to advocate alternative means of documenting student outcomes. Darling-Hammond (1994) and others attest to the inadequacy of standardized test measurements to document teacher or student learning outcomes. "Performance assessment is a closer measure of our children's ability to achieve the aspirations we hold for them than are conventional forms of standardized testing" (Eisner, 1999, p. 658). The chasm in recent educational reform literature has been the lack of authentic assessment strategies correlated with standards to improve teacher education programs and P-12 learning.

With policymakers' increasing determination to assess institutional progress by test scores and quantitative data, teacher educators at this Georgia institution wanted to provide a means of tangible, authentic, qualitative data that could be readily available for distribution to key constituents. Further, it was and is important that this process be documented and supported through alignment with content and performance standards of recognized organizations. The objective, therefore, was to develop a performance-based assessment model that

enhanced the assessment practices of preservice teacher education programs and P-12 student learning, and supported and complemented these teacher educators' commitment to reflective and collaborative practice.

Portfolio Assessment

School systems are using portfolios to evaluate inservice teachers. These portfolios are a compilation of work produced by teachers that highlights and demonstrates their knowledge and skills in teaching (Wolfe, 1995). In general, the portfolio serves as a documentation of teacher growth and achievement over a specific time period. In discussing the benefits of portfolio assessment with inservice teachers, Blake (1995) argues that this process encourages more self-assessment and evaluation, encouraging educators to see the teaching process holistically, measuring their content knowledge, intellectual and problem-solving abilities, pedagogical skills, curriculum knowledge, insight, and knowledge of learners. Because of recent research noting the effectiveness of portfolio use with inservice teachers, increasing numbers of teacher educators are using assessment portfolios to help preservice teachers document and reflect upon their development as educators, noting specific teaching and learning experiences, and assessing preservice teachers' attainment of specific knowledge and pedagogical practices (Barton & Collins, 1993; Ryan & Kuhs, 1993; Barry & Shannon, 1997).

According to the National Education Association (1993), a portfolio is a record of learning that centers on the student's work and her/his reflection of that

work. Material is collected both by the student and by faculty and /or staff and should be an indication of progress toward particular goals. Although by definition each portfolio should be unique to its individual creator, there is a clear indication that standardized criteria must be used to assess quality. Doolittle (1994) purports that making the evaluation of portfolios reliable and valid is problematic since there is a great deal of subjectivity. He and others suggest the use of rubrics in setting standards for assessment portfolios (Carr, 1998; Fischer & King, 1995). As professors move from using a checklist of included materials to a rubric, they have better defined the portfolio process and the quality of work expected.

Utilization of Technology

Approximately five years ago, the school of education at this institution received an Ernest L. Boyer technology in education grant, which enabled the purchase of a well-equipped multimedia computer system and a compact disc recordable. After gleaning information from a national conference on performance-based assessment and standards in teacher preparation programs, two teacher educators brainstormed ways that this acquired technology could be utilized as an alternative form of assessment to document preservice teacher learning. From that discussion came the idea to employ the grant-funded technology as well as the expertise of teacher educators, host teachers, and preservice teachers to create an assessment portfolio on compact disc. Realizing

the portability and accessibility of compact discs, the teacher educators believed that this product could be shown to local, state, and national accreditation and policy-making bodies to clearly articulate the learning process of preservice teachers and P-12 students.

Method

This research focused on the use of assessment portfolios to document preservice teachers' learning and their impact on P-12 student learning. Interstate New Teacher Assessment and Support Consortium (INTASC) performance standards were utilized to assess the developing competencies of the participating preservice teachers (Appendix A). Rubrics were developed to assess P-12 student progress. The unique aspect of this particular research was twofold: the use of the assessment portfolio on two levels (preservice teacher learning and P-12 student learning); and the utilization of technology to "store" all materials of the portfolio.

The portfolio assessment model was piloted with a small group of host teachers and preservice students during the 1999-2000 school year. The two teacher educators collaborated with four pairs of preservice teachers and host teachers in partner schools in a school system in central Georgia--two in early childhood education and two in secondary education--to create a research team of ten. Two planning meetings were held to orient the research team to the technologies employed; to conceptualize how to use the multimedia portfolio to reflect the planning, teaching, and evaluating components of the teaching and

learning process; and to establish a timeline for project implementation. It was agreed that during the course of a ten-week placement, each preservice teacher, with the guidance of her host teacher, would demonstrate her ability to (a) apply content, professional, and pedagogical knowledge; (b) plan and implement instruction and assess student learning; and (c) reflect on teaching and learning. Her emerging competencies to impact student learning, in accordance with INTASC performance standards, would be documented through selected data recorded onto a compact disc. Each compact disc would include a sample lesson plan; specific learning objectives for each P-12 student; a rubric developed for evaluation of learning objectives; a video clip of the actual lesson; the preservice teacher's written reflection of the lesson; P-12 student work samples from the lesson; excerpts from the preservice teacher's audio-taped assessment conference with P-12 students; and excerpts from the preservice teaching assessment conference with her host teacher and university supervisor. Within the one-semester timeframe, two of the four anticipated multimedia assessment portfolios were completed: Danielle's (early childhood) and Natalie's (secondary science).

Danielle's Pioneer Project

Danielle's product was the result of the collaborative effort of all four of the early childhood educators--host teachers Laney and Jeannie and preservice teachers Danielle and Paula--in two second grade classrooms. They began by brainstorming ideas for lesson topics. As part of their school's geography/history

magnet school focus, they were already planning a school-wide unit on the United States, designing lessons that would teach student research skills as well as provide content information. As a culmination of the unit, the students would be participating in the school social science fair by creating class projects. Danielle and Paula selected pioneer life as a cornerstone of the unit, and Laney and Jeannie assisted them in selecting appropriate objectives, creating lessons, designing a project and report to be completed by each student at home, writing a letter to parents, formulating a rubric to assess the projects and reports, and planning interviews to evaluate student learning. Laney and Jeannie completed a formal assessment on Danielle and Paula at the end of the process. This form, coded to INTASC standards, was used as a basis of discussion for the final audio-taped conference among the preservice teacher, host teacher, and teacher educator.

As Danielle and Paula progressed through the planning and implementation of the unit, Laney and Jeannie offered support and suggestions and assisted them in critiquing their teaching. Informal feedback was provided daily. During the students' oral reports, Danielle and Paula questioned their students to determine whether the objectives had been met.

Natalie's Monerans and Viruses Project

Natalie's host teacher, Dawn, was also an active and integral participant throughout the process. Together Natalie and Dawn decided the course of instruction should include the unit on viruses and monerans. The decision to use

this unit was based on several factors. First, it was a unit that Natalie was comfortable with teaching; secondly it allowed her to incorporate various learning styles; thirdly, it was a subject in which the students had little prior knowledge. They then decided that the best group of students to use for the pilot project was the Honor's Biology class.

Two weeks before they started the bacteria/virus unit, Natalie began reading aloud excerpts from *The Hot Zone*, a fictionalized and graphic account, based on a true story, of an outbreak of the Ebola virus in the United States, to stimulate student interest, familiarize them with the terminology they would encounter during the unit, and make the content "real" for them. Dawn and Natalie selected a variety of activities that supported the objectives and were designed to challenge and engage each individual. She gave each of the students a "focus sheet," similar to a college syllabus. The focus sheet basically provided a list for the students that detailed their assignments, the instructions, and due dates.

The major project for the unit was the "most wanted" bacteria poster. The students were given detailed instructions regarding what was required for the assignment. Each student received a different disease for which they were to research the causes and other pertinent information. The students were given a list of criteria to guide them in creating their poster. Natalie conducted and audiotaped individual conferences with the students to assess their learning and, upon the completion of the unit, participated in an audiotaped conference with her

host teacher (Dawn) and university supervisor (Charlotte) to assess the effectiveness of the process in relation to the INTASC standards.

CD Production

This process, however, was two-fold. After engaging in the process of actively collecting data to document learning--videotapes of their teaching, photographs, samples of student work, lesson plans (including objectives and rubrics), audiotapes of student and preservice teacher assessment conferences--the next step was to produce the CD—record the data onto a compact disc.

Fortunately, Danielle, Paula, and Natalie had the services of a graduate assistant in technology to assist with such processes as "digitizing" video clips and "burning" the compact discs. Danielle and Paula worked together to edit video and audiotapes, collect student work samples, take pictures of final projects, and create a PowerPoint shell before they came to campus to work with the graduate assistant to construct the compact disc. They decided to combine their efforts to produce Danielle's portfolio, the team's first model.

Using Danielle's portfolio as a model, Natalie was able to conceptualize her product, building upon what Danielle had accomplished. In order to make her portfolio more "user-friendly," Natalie created a concept map and broke down her pre-service teaching experience into categories from which she would be able to select the aspect of her pre-service teaching that she wanted to review. She included slides highlighting photographs of selected students with their "most

wanted" posters and audio clips of their assessment of their work, video clips of her lecture/discussion with the class, and audio excerpts from her assessment conference.

Reflection and Evaluation

Upon completion of the project, Danielle and Natalie reflected on their learning. This was audio-taped and included on their compact discs.

Danielle's Final Reflection

With the assistance of my host teacher, I carefully constructed lesson plans to meet the needs of all children. I developed clear objectives and made sure evaluations would positively assess the students' learning. When I introduced the unit project to the class, I gave them a rubric with clear expectations. As the week went on, I talked with students about their progress and they had an opportunity to tell the class ideas they had learned. When they presented their final projects, they shared how they had constructed their models and gave a few facts they had learned about pioneers. I gave them immediate feedback and I was so proud of their accomplishments. I learned so much from developing, organizing, and implementing this unit. It seems to me that thorough planning produces a strong learning environment for children.

Natalie's Final Reflection

By constantly reflecting on my teaching and evaluating what effect I was having on my students, I feel that I was able to more fully impact the learning of my students. These practices made me aware of what problems my students were having and search for ways to help them accomplish our combined goal of their learning. The lessons I created were more defined for the specific needs of my classroom and through the use of many different strategies of alternative assessment, I was able to more intricately engage the very varied population within my classroom. I think the students were more comfortable although the subject was unfamiliar because we approached the content from so many angles. Repeatedly incorporating self-assessment into my teaching enabled me to constantly learn from my experiences, not only to learn what not to do again, but to evaluate what was successful and what simply needs to be modified. However, the most integral lesson I learned was most likely the need to be flexible. I learned that it was critical to evaluate what you do and why. Developing a way to know how to gauge each student in the room and be aware of how they are doing and where they are in their progress is the very identity and job description of an educator.

Host Teacher Reflections

Host teachers Laney, Jeannie, and Dawn, in reflecting on the effectiveness of the project, recognized that the process provided the preservice teachers with a

structure to demonstrate their emerging pedagogical knowledge and skills. Laney and Jeannie found that:

It facilitated our partnership by creating a framework for planning and discussion. Throughout the process, both preservice and host teachers were able to monitor student progress informally by focusing on the components of the multimedia portfolio. The preservice teachers used this vehicle to reflectively assess their emerging competencies to impact student learning. We were very pleased to observe our students demonstrate their research skills and knowledge of pioneer life.

The goal of all teaching is to enhance the student's desire for learning. In order for a teacher to be able to identify if students have learned the content material, one must be a reflective teacher. Utilizing the multimedia portfolios enhanced this process and allowed for a more permanent professional level of self-evaluation. Dawn believed that it positively affected the whole teaching experience:

Natalie was forced to think about her course of action, and how she would evaluate it, such as videos and student work. By becoming more reflective, she was able to develop attenuation to student learning and comprehension. Natalie increasingly became more attentive to student understanding throughout the teaching process rather than just focusing on the completion of the unit. She was able to use unique questioning

techniques that allowed her to gauge their understanding. The actual videotaping enabled Natalie to evaluate the clarity of her instructions. This entire reflective process not only became a major tool for improving students' test scores but also provided constant assessment and reflection for the teacher involved. An added benefit to this process was the incorporation of these techniques by other, more experienced teachers. They observed her styles and its benefits and utilized them in their own teaching.

INTASC Standards

By using INTASC standards as a basis for assessing the project, researchers were able to document the learning that occurred. For example, Danielle, in reviewing a videotape of her teaching, coded her reflections on this lesson to INTASC standards:

I began with a mini-lesson to review who the pioneers were and why they came to America. (#1) For this, I used the pull down map of the United States of American to help the class see the areas of settlement. (#3,4) I then traced the movement of the Westward Expansion, and we discussed how the pioneers traveled and the resources that were available to them. I asked the class if they would like to learn more about the pioneers. They responded positively, so I then asked how they could find out more information about the pioneers. Their response was tremendous. (#5) The

majority of the class was eager with numerous ideas. I wrote the word "research" on the board and asked someone to read it to the class, and he even knew the definition. I circled the word and made a web diagram on the board of all the ways the class could brainstorm to do research.

(#2,3,4) This was exciting because the list seemed as if it would never end. I was supportive of every response, only making corrections when necessary. Every student was intrigued with thoughts of how they could learn more about the pioneers. I learned that allowing students to generate major points of a lesson can be very beneficial. (#5)

After discussing research and introducing the unit project to the class..., I concluded the lesson by first answering any questions they had. Next, I had the students recall as many important points as they could. (#5,6,8,9) ...Afterwards, I discussed the lesson with my host teacher. (#9) We pointed out the things that seemed to work really well and talked about parts that could be improved.... Over the next two weeks, I reminded the class about the project and the report. I had them write about their progress in their journal about four days after the initial lesson. Creating the lesson and projects for my second grade placement was an extremely beneficial and rewarding experience for me. (#7,9)

One can clearly see that Danielle is a reflective practitioner who understands the components of good planning and effective assessment measures.

Similarly, the overall success of the project can be documented by referencing the INTASC standards, which served as the theoretical foundation of the project. The process of constructing the compact discs allowed preservice teachers to refine skills as reflective practitioners. They noted that they were continually evaluating their choices in the classroom because of the framework of the project that had been established. (#9)

Because the preservice teachers worked closely with host teachers in the schools, they were cognizant of how the students in the classroom learned and developed and how lessons should be adapted to diverse learners. Lessons were constructed as meaningful learning experiences for students, utilizing individual and group instruction, collaboration, and active engagement. (#1,2,3,4,5,7)

For example, within Natalie's unit on viruses/monerans, the lessons included an investigation conducted by the students using a case study called "The Bleeding Baby Syndrome." The students were arranged in pre-determined groups that had all been given the same introductory information, but each group "investigated" a different location and, therefore, uncovered different clues. The only way to solve the case was for each group to share the clues they had gleaned from the investigation with the rest of the class to compare and formulate their own hypothesis of the cause for the disease. In her evaluation of the activity Natalie discussed her students' remarkable response to the activity. Students that were difficult to reach were taking leadership roles in their groups and because of

the success with the activity, she used it in a class she had not originally planned to include.

The preservice teachers used both formal and informal means of assessment and communicated assessment results with all constituents in the learning community. (#8) Lesson assessments included both oral and written feedback. By using video and audio taping, internet research, and oral and written assignments, the preservice teachers were able to present information in a variety of techniques in an effort to foster active inquiry and develop critical thinking.

(#6)

Preservice teachers and teacher educators are now using this compact disc as an alternative means of documenting P-12 student learning to share with parents, local school administrators, state and national professional organizations, institutions of higher learning, and state and national policymakers. (#10)

Effect of Technology

How did the use of technology contribute to this overall learning? After interviewing Danielle, Paula, and Natalie, the teacher educators concluded that the process of choosing specific video and audio clips for the compact disc, as well as organizing the disc in a way to show that both preservice and P-12 students had accomplished lesson goals, contributed to the effectiveness of the project. Informal interviews with teachers and principals in the community indicated that the use of the compact disc would be highly successful in giving

administrators a clear indication of the quality of preservice teacher they could hire.

But what about the technology itself? The research team found that the process was much more time-consuming and cumbersome than they had expected. The process of thinking, organizing, and burning the compact disc was even more time intensive. Consequently, although four preservice teachers participated in the project, only two assessment portfolios were produced. Because neither the preservice teachers, teacher educators, nor host teachers had ever employed such technology, they were unable to predict what questions and obstacles would occur. As a result of this pilot project, recommendations have been made to the curriculum committee to make the use of the compact disc recordable a requirement in technology classes for preservice teachers in preparation for the culminating portfolio assessment project.

Conclusion

Clearly SCDEs are being held accountable for the effectiveness of their preparation programs and the impact those programs have on P-12 learning. This process approach is one way to document program efficacy while aligning teacher preparation standards with P-12 student outcomes. Placing all information on a compact disc not only engages the preservice teacher in the use of technology but also provides an easily accessible and transferable resource for documentation to local, state, and national agencies.

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Appendix A
INTERSTATE NEW TEACHER ASSESSMENT
AND SUPPORT CONSORTIUM (INTASC) PRINCIPLES

Principle 1. The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make aspects of subject matter meaningful for students.

Principle 2. The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

Principle 3. The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

Principle 4. The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

Principle 5. The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Principle 6. The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

Principle 7. The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

Principle 8. The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

Principle 9. The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

Principle 10. The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.